

OBSERVATIONS ON BANANAS IN SIAM.

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During the early part of the year 1928 the author had occasion to visit Siam and other Eastern countries in connection with investigations on bananas that are being carried out jointly by the Empire Marketing Board, the Royal Botanic Gardens, Kew, and the Imperial College of Tropical Agriculture, Trinidad. These investigations are intended primarily to benefit the banana-growing industry in the West Indies and other parts of the British Empire. In the West Indies and Caribbean region the banana grown almost exclusively for shipment to Europe and the United States is the "Gros Michel" or "Jamaica" banana, a large-fingered variety of good flavour and excellent shipping qualities. Unfortunately this variety is very susceptible to a devastating disease, commonly known as "Panama Disease" (*Fusarium cubense*). This disease now has a footing in almost all commercial banana-growing countries. As methods of combating this disease are costly and by no means entirely effective, the advantage to be gained from obtaining a new variety of banana that would be resistant to Panama disease and at the same time have suitable edible and shipping qualities is obvious. South-Eastern Asia, particularly the Indo-Malayan region, is regarded as being the original home of the cultivated banana, its occurrence now in even the more remote parts of tropical Africa, America and Australia, being entirely due to man. A greater number of varieties of banana exist in these South Eastern Asiatic countries than in any other country. It was in this area therefore that it was thought the chances were greatest of obtaining the type of banana required.

Propagating material in the nature of "suckers" or "offsets" were despatched by the writer from all the countries visited to the Royal Botanic Gardens, Kew, where they are grown and kept in quarantine for a period of six months to a year prior to being sent out to the Imperial College of Tropical Agriculture, Trinidad. It is only when these new Eastern varieties have been established in

Trinidad and are inoculated experimentally with the Panama disease organism that the extent to which they are likely to be resistant to the disease will be ascertained.

As there appears to be no published account of the varieties of banana cultivated in Siam, it is thought that a brief account of the commoner forms to be met with, and their affinities with those in neighbouring countries, may not be entirely out of place. It must be pointed out however that the writer's sojourn in Siam was not of long duration, and though Southern and Peninsular Siam were traversed, time did not allow of the more northern and eastern areas being visited. It is more than probable therefore that the varieties mentioned in this paper constitute only a proportion of the total number of varieties of banana in more or less common cultivation throughout the Kingdom. A really comprehensive study of bananas in Siam could only be made by one who is resident in the country, and is able to collect and grow together the different varieties and observe carefully their different characteristics in the different stages of development.

Bananas in Siam may roughly be placed under two main categories, according to whether they contain seed in the fruit or are seedless. In the ordinary way it is the seedless forms that are of most value and use to man. However, it will be shown later that the seeding forms are also of special interest and may prove to be of great value, but in an indirect manner.

SEEDLESS BANANAS

One of the most interesting of the ordinary seedless varieties from the point of view of being a possible substitute for the "Jamaica" banana is that known as "Klui-hom".¹ It was found to exist in several subvarieties or forms such as "Klui-hom-kieu"² "Klui-hom-tong",³ "Klui-hom-kom"⁴ etc.. The differences between these forms is not great and they all belong undoubtedly to the same basic type. "Klui-hom-tong," the form most commonly met with, is, when well-grown, an excellent banana. It is very similar to, if not

¹ ปล้วยหอม ² ปล้วยหอมเขียว ³ ปล้วยหอมทอง ⁴ ปล้วยหอมค่อม

identical with the "Pisang embon" of Malaya and "Thihmwe" forms of Burma. Its merits as a potential commercial banana are chiefly:— (1) its large well-filled fingers which lie adjacent to one another throughout the greater part of the length; (2)—its good flavour; and (3) its well-formed compact bunches which should stand handling well. "Klui-hom-kieu" is, as the name indicates, a form that remains green or yellow-green on ripening and never turns to a truly yellow colour. This peculiarity, though of no consequence for local consumption, would be a serious drawback on the American or European markets, as a bright attractive colour is an important trade feature. The flesh of this green form is softer than that of the ordinary "Klui-hom" and is regarded by many as inferior to it.

A very small though delicious variety, common around Bangkok and to be found on the Bangkok fruit markets, is the "Klui-kai"¹ or "egg banana". It is identical with the "golden banana" or "Pisang maas" of British Malaya, so called no doubt, on account of the rich orange colour of the flesh in some cases. The fingers are small, not more than 3 inches in length and 1½ inches in diameter as a rule, and stick out more or less at right angles to the bunch. This feature, combined with the fact that the skin is very thin, rendering the fruit very liable to bruising, in all probability disqualifies this otherwise excellent little banana from consideration as a possible shipping banana. In Malaya this variety is in great esteem and always commands a much higher price than any other variety, in spite of its small size.

What would appear to be the most universally grown banana throughout southern Siam is "Klui-nam-wa".² It appears to exist in two forms which differ only in the colour of the flesh of the fruit. In the more common form the flesh is cream-coloured, whereas in the other it is tinged with pink. The fruit is buff in colour outwardly and is rather short and stout. The flesh has a pleasant sweet sub-acid flavour but is of a rather tough consistency towards the centre. It was noticed that in some cases the fruit

¹ กล้วยไข่ ² กล้วยน้ำขมิ้น

was inclined to break away readily at the pedicel when ripe. This factor may militate against its possible value as a shipping banana.

The preparation of sun-dried bananas was carried on in all the banana areas visited and on all the bazaars dried bananas appear to be one of the common commodities offered for sale. "Klui-nam-wa" was reputed throughout to be the best variety for drying and this variety was used more than any other for this purpose. Cultivators stated that it was preferred to other varieties because "it became neither too hard nor too soft when dry, as did many of the other varieties".

In the Ban Pong district, where bananas were found being cultivated on rather an extensive scale, this variety was grown almost exclusively, and the fruit mostly railed to Bangkok for consumption. The conditions here were particularly hot and dry at the time of the visit and facilities for irrigating the bananas were absent. It was found that the Chinese cultivators were all of the same opinion regarding the hardiness of "Klui-nam-wa" and stated that under their conditions it was the only variety that would thrive. Other varieties commanding a higher price such as "Klui-hom" and "Klui-kai" had been tried, but without success.

It is reputed by residents in Siam that seeds are sometimes met with in this variety, but only to the extent of one or two per finger. "Klui-nam-wa" is without doubt identical with the variety known in Burma as "Yakhine". It is grown a great deal in the vicinity of Mandalay and is found to respond very well to irrigation conditions.

"Klui-farang"¹ is a well-filled plump banana about 4½ inches in length and almost completely cylindrical in shape. The flesh, cream in colour, is soft and buttery and of good flavour. The few bunches seen of this variety were small and lacking in compactness, though these bunches may not have been truly representative of the variety. The name given to this variety would seem to indicate that it has

¹ ကလွီနာမဝါ

been introduced to Siam from elsewhere. It is very similar to the variety known as "Htawbat" or the "butter banana" in Burma, and may owe its origin to that quarter.

The variety known as "Klui-hakmuk"¹ is one of those most commonly used for cooking in Siam. It is not however entirely a cooking banana or "plantain" and is eaten in the uncooked state. It is the variety generally fed to children and invalids, the soft rather watery flesh being regarded as more readily digestible than any other variety. The writer was informed that when an infant reaches the stage of being able to take solid food the "Hakmuk" banana is one of the first forms of solid food given. The fingers are large and plump, 6½ inches in length and fully 1½-2 inches in diameter in the centre. The fruit is generally angular with five prominent ridges. The most characteristic feature is perhaps the very long thin pedicel, an inch in length. At the apex the fruit tapers gradually to a blunt point. The colour when ripe is a pale yellow with a slight bloom. Pink colourations appear here and there in some cases, particularly where the fingers are in contact with one another on the bunch. The texture of the flesh is rather coarse and the flavour such as is not likely to appeal to many.

The common red or bronze banana known as "Klui-nak"² which occurs also in Malaya, Burma, and elsewhere, can hardly lay claim to being in the front rank of dessert bananas. It undoubtedly possesses a distinctive flavour which finds favour with some, but not with others. A peculiar belief exists among the Malays in British Malaya to the effect that those who consume the fruit are liable to become affected with a skin complaint. No such belief exists among the cultivators in Siam, however, as far as the writer was able to ascertain.

Another variety of red banana is "Klui-lep-mu-nang."³ Here the fruit is very slender and when peeled is hardly the thickness of the little finger. This variety is very distinctive and quite

¹ กล้วยหักมุก ² กล้วยนาค ³ กล้วยเล็บมือนาง

different from all other varieties seen in the East.

Other varieties of seedless edible banana occurring in Siam are :-- " Klui-klai," ¹ " Klui-san," ² " Klui-karabun," ³ " Klui-nom-sao," ⁴ " Klui-kran," ⁵ " Klui-praya-sawoi," ⁶ and no doubt many others.

The Dwarf or Canary Banana (*Musa Cavendishii*) was not encountered in any of the areas visited in Siam. This is strange for it occurs in Malaya and is common in Burma. It has many merits apart from the large bunches of first class fruit it yields.

Being dwarf in habit it withstands the harmful effects of severe wind much better than any of the tall-growing forms. Furthermore being more of a subtropical than a tropical species it can be grown successfully at higher altitudes and in colder areas than the other forms. It is possible of course that it may be in cultivation in northern and eastern Siam.

SEEDING BANANAS.

Among the seeding bananas there appear to be some interesting forms. These are commonly known by the name of "Klui-tani", ⁷ as residents in Siam are no doubt fully aware. The two chief forms are "Klui-tani-ban" ⁸ and "Klui-tani-pa" ⁹ both of which are to be found in and around Bangkok. There is not a great deal of difference between the two. "Klui-tani-ban" is the more vigorous growing of the two and has a darker pseudo-stem and the fruits more tightly packed with seeds than "Klui-tani-pa". The fingers are six to seven inches long and about two inches in diameter, generally rather sharply angled, and characterized by an unusually long pedicel. Another noticeable feature is the persistent style and corolla remains which adhere to the fruit right up to the ripening stage. The fruit assumes a muddy yellow colour when ripe and has a watery sweet pulp, but is not eaten in the ordinary way on account of the

¹ กล้วยกล้วย ² กล้วยสัน ³ กล้วยกระพูน ⁴ กล้วยนมสาว ⁵ กล้วยก้น

⁶ กล้วยพระยาเสวย ⁷ กล้วยตานี ⁸ กล้วยตานีบ้าน ⁹ กล้วยตานีป่า

numerous seeds present. All the fruits examined of "Klui-tani-ban" were distinctly six-locular and not three-locular as is customary in most species of *Musa*. These interesting seeding forms are regarded under the existing classification of the genus *Musa* as forms of *Musa sapientum* L. It should be pointed out however that the wild and seeding Musas of Siam have not as yet been fully worked out and subsequent classification may lead to the isolation of the "Klui-tani" forms.

The uses to which these seeding forms are put in Siam are no doubt familiar to most people and perhaps hardly warrant description in the present article. The leaves, being tougher than those of the ordinary seedless bananas, are in great demand in bazaars as wrappers for foodstuffs and other articles. They are much used in cooking in the same way, the contention being held that, in contrast to other varieties, they impart neither flavour nor colour to the foodstuff. The very young leaves dried are serviceable as cigarette wrappers and the heart or inflorescence bud is extensively used as a vegetable or "cabbage". When cooked it is free from any bitter principle which characterises the "cabbage" of so many other varieties.

The stems when cut up are a suitable food for some forms of stock, particularly water-buffaloes and hogs, and the outer leaf-sheaths when nearly dry and cut into strips are a serviceable binding material. The fruit itself does not appear to be much utilized. It is generally only used in the green immature stage before the seeds harden, and then most commonly as a pickle. The young fruits are cut into thin slices and placed in vinegar, to which a little salt is added. After standing for some days the pickle is ready for use. Another use for the young fruits is in curries.

The interest attached to these seeding bananas lies in their possible value as female parents in breeding work. Most seeding forms of *Musa* have shown themselves to be resistant to Panama Disease and it is thought that by crossing these seeding forms with superior edible varieties it might be possible to obtain eventually

from the progeny individuals with the disease resistant qualities of the seeding female parent combined with the superior edible qualities of the male. To achieve such results would of course require several generations of breeding, and one of the chief obstacles to be overcome will no doubt be the subsequent elimination of the seed-bearing tendency in the more promising of the hybrids. Work on these lines has however been commenced at the Tropical School of Agriculture, Trinidad, and it is possible that some of the material obtained from Siam, both seedless and seeding, may prove to be of the greatest value.